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PREFACE

Keeping in view the changed requirements of the Himachal Pradesh State Electricity Board and expansions made since the very inception of this Department a need, therefore, arose to lay down the detailed instruction for the guidance of all concerned so as to ensure Safety Code has been compiled. The Safety Code is mainly intended for internal use and guidance of the Board's employees. The instructions contained in it are meant to be followed with care but with intelligence. The specific procedure as laid down for doing work on electric apparatus installations should be followed.

This Safety Code will be helpful to minimize the accidents in case the accidents in case the instructions contained are practiced by all the employees all time in all sections.

This Safety Code has been divided in 12 Sections. Each Section deals with one particular subject. Cross references have been indicated, wherever necessary.

It is felt this Code will be more useful to the field staff.

Suggestion for improvement in this Safety Code may be made and discrepancies errors pointed out to the Chief Engineer (Commercial), H.P.S.E.B., Shimla.

(R.N. THAKUR)
MEMBER (OPERATION)

CHAPTER-1

DEFINITIONS

1.1 (a) "Pressure" means the difference of electric potential measured in Volts between any two conductors or between any part of either conductor and the earth as measured by a suitable Voltmeter and is said to be-

(i) "Low" where the voltage does not exceed 250 Volts under normal conditions subject, however, to the percentage variation allowed by the I.E. Rules, 1956.

(ii) "Medium" where the voltage does not exceed 650 Volts under normal conditions subject, however, to the percentage variation allowed by the I.E. Rules, 1956.

(iii) "High" where the voltage does not exceed 33,000 Volts under normal conditions subject, however, to the percentage variation allowed by the I.E. Rules, 1956.

(iv) "Extra High" where the voltage does not exceed 33,000 Volts under normal conditions subject, however, to the percentage variation allowed by the I.E. Rules, 1956.

1.1 (b) Himachal Pradesh State Electricity Board, has adopted alternating current system at 50 cycles per second at the following pressures :-

Pressures	Declared Voltage	Remarks
1	2	3
	Volts	
Low	230	Phase to neutral
Medium	400	Between Phases
High	2,200	-do-
High	11,000	-do-
High	15,000	-do-
High	22,000	-do-
High	33,000	-do-
High	66,000	-do-
Extra High	132000	-do-
Extra High	220000	-do-

1.2 "System" means an electrical system in which all the conductors and apparatus are electrically connected to a common source of electric supply.

1.3 "Apparatus" means Electrical apparatus and includes all machines, fittings, accessories and appliances in which conductors are used such as transformers, switchgear electric power transmission and distribution lines, under ground cables etc.

1.4 "Conductor" means a body or substance, any wire, cable, bar, tube, rail or plate used for conducting energy and so arranged as to be electrically connected to a system .

1.5 "Covered with insulating material" means adequately covered with insulating material of such quality and thickness as to prevent danger.

1.6 "Care" means not covered with insulating material.

1.7 "Circuit" means an arrangement of conductor or conductors for the purpose of conveying energy and forming a system or a branch of system.

1.8 "Circuit Breaker" means a device, capable of making and breaking the circuit under all conditions, and unless otherwise specified, so designed as to break the circuit.

1.9 "Concentric Cable" means a composite cable comprising an inner conductor which is insulated and one or more outer conductors which are insulated from one another and are disposed over the insulation of and more or less around, the inner conductor.

1.10 "Cutout" means any appliance for automatically interrupting the transmission of energy through any conductor when the current rises above a predetermined amount and shall also include fusible cutout.

1.11 "Enclosed Sub-Station" means any premises or enclosure or part thereof, being enough to admit the entrance of a person after the apparatus therein is in position, containing apparatus for transforming or converting energy to or from a voltage at or above medium voltage (other than transforming or converting solely for the operation of switchgear or instruments) with or without any other apparatus for switching, controlling or otherwise regulating the energy, and includes the apparatus therein.

1.12 "Netural Conductor" means that conductor of a multi-wire system, voltage of which is normally intermediate between the voltage of the other conductors of the system and shall also include return-wire of the single phase system.

1.13 "Dead" means at or about earth potential and disconnected from any live system provided that electric apparatus, whose conductors are separated from a live conductor by s spark gap, shall not be considered dead.

Note: The term "dead" is used only with reference to current carrying parts when these parts are not live.

1.14 "Earth" means the conducting mass of earth or any conductor in direct electrical connection therewith.

1.15 "Earthed" or "Connected to earth" means connected with the general mass of earth in such a manner as to ensure at all times an immediate discharge of energy without danger to life and apparatus.

1.16 "Earthing System" means an electrical system in which all the conductors are earthed.

1.17 "Danger" means danger to health or danger to life or limb from shock, burn, or other injury to person employed, or from fire, attendant upon the generation, transformation, transmission, distribution, or use of electrical energy.

1.18 "Earthing Connection" means a metallic conductor for connecting electrical equipment to earth.

1.19 "Live" means electrically charged. A conductor is live when a difference of electrical potential exists between it and earth, or when it is connected to another conductor or circuit in which such a potential difference exists. Electrical apparatus is live when its conductors are live.

1.20 "Lightning Arrestor" means a device which has property of diverting to earth any electrical surge of excessively high amplitude applied to its terminals and is capable of interrupting fault current if present and restoring itself thereafter to its original operating conditions.

1.21 "Employee" means an authorized person of either gazetted or non-gazetted rank, who is in receipt of wages, salary, or pay in return for services rendered to the Himachal Pradesh State Electricity Board.

1.22 "Power Controller" means for the purpose of safety Code, an authorized person in charge of all switching operations on the 400 KV, 220 KV, 132 KV, and 66 KV, Trunk and Branch Transmission system, in power stations and Grid Sub-stations.

1.23 "Load Despatcher" means for the purpose of Safety Code, an authorized person in charge of all loading instructions, control of generating units connected to the interlinked power system, maintenance of voltage regulation and frequency.

1.24 "Assistant Power Controller" means for the purpose of Safety Code an authorized person to assist the Power Controller in the performance of his duties and to issue switching instructions in defined areas.

1.25 "Resident Engineer" means for the purpose of Safety Code an authorized person in charge of operation and maintenance of power House, Sub-station. Trunk and Branch Transmission lines, local distribution system allotted to his charge.

1.26 "Assistant Resident Engineer" means for the purpose of Safety Code an authorized person to assist the Resident Engineer in the performance of his duties.

1.27 "Sub-Station Engineer" means for the purpose of Safety Code an authorized person in charge of operation and maintenance of Grid Sub-Station and other ancillary works a allotted to his charge.

1.28 "Shift Engineer" means an authorized person in charge for the running of Power House and sub-station during a shift.

1.29 "Sub-Divisional Officer" means for the purpose of this Safety Code, authorized person in charge, under the instructions of an Executive Engineer, of the operation and maintenance of the Trunk and Branch Transmission and local Distribution System allotted to his charge, excluding only the switching operations duly carried out under the instructions of the Power Controller.

1.30 "Control Room Operator and Sub-Station Operator" means authorized person in charge of the operation at a Sub-Station.

1.31 "Junior Engineer" means an authorized person in charge of operation, maintenance and construction of electric supply lines and local distribution system placed under his charge.

1.32 "Forman", "Assistant Forman", "Line man" means an employee authorized to inspect and work on electric supply lines and switches connected there to an patrol electric supply lines.

1.33 "Assistant Lineman" means an employee authorized to inspect and work on electric supply lines and switches connected thereto and to patrol electric supply lines and to assist the Assistant Foreman, Lineman, in the discharge of their duties.

1.34 "Permit to work" means a form of declaration signed and given by one authorized person to another in charge of work to be carried out on any electric apparatus of electric supply lines for the purpose of making known to such later person exactly what apparatus or electric supply lines are made dead and earthed at the sub-station.

1.35 "Authorized Person" means a person who is duly authorized to perform the duties pertaining to his employment, the authorization being by an officer of the Himachal Pradesh State Electricity Board empowered for that purpose.

1.36 "Use of energy" means the conversion of electrical energy into mechanical or chemical energy, heart or light for the purpose of providing mechanical energy electrolysis, heat or light.

1.37 "Electric supply lines" means electric supply, or over head, electric power transmission and distribution lines, including any underground cables connected thereto Electric supply lines are included in the expression "apparatus".

1.38 "Caution Notice" means a notice attached to dead electrical apparatus to convey a warning against such equipment being made live.

1.39 "Danger notice" means a notice attached to live electrical apparatus calling attention to the danger of touching or interfering with such apparatus.

1.40 "Executive Engineer" means, for the purpose of Safety Code, an authorized person in charge of the operation and maintenance of Trunk and Branch Transmission and Local Distribution Systems allotted to the charge.

1.41 " Superintending Engineer" means, for the purpose of this Safety Code, an authorized person who is responsible to the Chief Engineer for the general professional control of the power stations and Trunk and Branch Transmission and Local Distribution Systems allotted to the charge of the Departmental offices within his circle of superintendence.

1.42 "Chief Engineer" means, the Chief Engineer (Operation), Himachal Pradesh State Electricity Board.

1.43 "Contractor's Engineer" means, for the purpose of this Safety Code, a duly authorized representative, approved by the Chief Engineer in writing, of a firm who have having supplied and erected apparatus has to carry out work upon such apparatus under the terms of the contract with that firm.

CHAPTER-2

GENERAL PRECAUTIONS

2.1 "Safety First"—

It is essential that safety should be considered and practiced in all departments and at all times. The real benefits to be derived from a code of this nature will be realized only when the instructions it contains are regarded as normal routine duty and not as involving extra and laborious operations.

2.2 "Exercise Care"—

(a) In climbing say, transmission towers and poles, and setting about any work, employees should not waste time, but concentrate on the matter in hand; yet, when working about electric supply lines and other apparatus, one should consider the effect of each act and do nothing which may endanger himself or others. Employees must be careful always to place themselves in a safe and secure position to avoid slipping stumbling or moving backward against live conductors. The care assumed to be exercised by others must not be relied upon for protection.

(b) The majority of accidents which occur are preventable, if proper precautions are taken.

Accidents occur due to lack of proper supervision or workman's carelessness and may be attributed to:

(i) Class of work beyond mental or physical ability of the employee.
(ii) Lack of proper instructions.
(iii) Improper tools or devices.
(iv) Method pursued not suitable for work.
(v) Protective devices not used.
(vi) Rules or instructions not observed.
(vii) Lack of proper inspection and maintenance.
(viii) Mental condition of employee.
(ix) Failure to think.
(x) Mechanical manner of doing work.
(xi) Haste and over boldness.
(xii) Intemperance.

2.3 "Use Caution"—

(a) Make a habit of being cautious, be on the look-out for warning signs and signals.
(b) Warn others when they seem to be in danger near live conductors.

(c) Employees whose knowledge does not warrant them to approach or handle live equipment and lines should be kept away from them.

(d) Workman should not proceed with work beyond the limit of the orders given to them.

2.4 "Taking Chance" --- An employee should take no chances. He should guard against every possible accident. Always be careful. The most efficient man is always careful.

2.5 "Standing on apparatus"--- Do not stand on transformers or other apparatus to work on live conductors.

2.6 "Treat every thing as live"---

(a) Electrical apparatus must always be regarded as live, unless it is positively know to be dead, and precautions must be taken accordingly.

(b) When working near a lightning arrestor or its earthing connections avoid touching it, unless the lightning arrestor is disconnected from the circuit it is installed to protect. A workman should personally take precautions for his safety from these equipments and lines. He should not depend on other workmen to protect him.

2.7 "Taking while working on or near Lines"--- Avoid unnecessary talk. Keep your mind on work.

2.8 "Dangerous Insulators"---

(a) Insulators and bushings supporting live high and extra-high pressure conductors carry dangerous electric charges and must never be touched while the conductors are live.

(b) Live high and extra high pressures insulated cables which have no lead sheathing or other metallic covering have a dangerous charge of electricity on the outer surface of the insulation, and must never be touched while the conductors are live

(c) The covering on insulated cables, must not be trusted. Treat such cables as if they were bare conductors.

(d) Street lighting wires should always be considered alive, unless they are effectively grounded.

2.9 "Foreign Voltage"—(a) Suppose you are to work on an electric supply line which, at some point probably miles away; has a 11,000 volt line under it or which, closely parallels an 33,000 or higher voltage line. Normally it would be dead after switching off; but supposing a piece of bark from a tree or some other material blows across the two lines, or a branch of a tree falls on them. It is obvious that the current from the live conductors will energise the supposed dead line which if the later is not properly earthed, may result in dangerous consequences. A little thought and precaution may often avert a serious accident.

(b) In removing an earthing connection, first remove the clips from the line conductors by means of the stick provided for the purpose and do not disconnect earth until this is done. Do not touch conductors after the earthing connections have been removed.

(c) Remember that where lines run parallel to or across extra high pressure lines, dangerous voltages may be induced in a "dead" line, if the later is not properly earthed locally.

2.10 "Exposure to Dangerous Voltages"—Every authorized person incharge of work on or about an apparatus, shall assure himself that the apparatus, is free from dangerous leakage or induction, and has been effectively earthed locally, before permitting men to work upon it.

2.11 "Erecting Low and Medium Pressure Electric Supply Lines on Extra High Pressure Line Poles"—When extending or altering a low or medium pressure electric supply line under extra high pressure conductors, employees must take particular care to see that the pole on which they are terminating the line is properly stayed to prevent the end strain of the low or medium pressure lines from unduly stressing the higher extra high tension wires above.

2.12 "Erecting New Conductors and Removing Old Conductors close to Live Conductors"—Special precautions must be taken to ensure that the new bare conductors are always earthed during the progress of such work. In case of new insulated conductors gloves and ropes must be used.

2.13 "Fire Extinguishers"—Ordinary fire extinguishers such as soda acid type are not suitable for use close to H.T. equipment, owing to the conductivity of the chemical ejected, and therefore, the danger of electric shock. Special extinguishers generally employing carbon-tetra-chloride, which is an insulator, are suitable, but they should not be used in closed locations on account of toxic effect of gases generated. Emulsion forming water jets got by forcing water at great pressure (over 3.52 Kg/sq.cm.) through nozzles to give extraordinary fine spray, can be used on both electrical equipment and on oil fires .Stand, if used in sufficient quantity is good for oil fires. However, use of sand for rotating machinery is not desirable

2.14 "Dangerous Pressures"—All the voltages mentioned in paragraph 1.1 (b) are dangerous (see paragraph 1.17 for definition of danger).

2.15 "Issue and Receipt of and Modifications to, the Safety Code"—

(a) A signed acknowledgment of receipt shall be given by every employee engaged on the operation, maintenance, repairs of section of electrical apparatus and electric supply lines, to whom a copy of this Safety Code is issued, and a register of all recipients shall be kept in the Chief Engineer's (Operation) office. This procedure shall apply also to all additional instruction and amendments to the existing Safety Code.

(b) The Ssfety Code will remain the property of the Himachal Pradesh State Electricity Board and Shall be surrendered by employees leaving the Board.

2.16 (a) This Safety Code has been issued with a view to protect the lives of employees and members of the public and the following officers and subordinates are required to be familiar with and obey the instructions contained in this Code.

(1) Assistant Engineers/Assistant Executive Engineers
(2) Shift Engineers
(3) Apprentice Engineers.
(4) Control Room Operators.
(5) Sub-Station Operators.
(6) Sub-Station Attendants
(7) Electrical Mistries.
(8) Electrical Foreman
(9) Junior Engineers/ Overseers Electrical.
(10) Electrical Winch Drivers.
(11) Electrical Crane Drivers.
(12) Electrical Welders and Assistant Welders.
(13) Cable Jointers.
(14) Telephone Supervisors and Assistant Telephone Supervisors
(15) Switch Board Attendants.
(16) Test Inspectors
(17) Power House Superintendent.

(b) After a period of not more than six month's service, all employees to whom copy of the Safety Code has been issued shall undergo on oral Examination in knowledge of the Code. A further examination will be conducted on the occasion of promotion to a higher grade and a practical examination in the discretion of the Examiner. These examinations shall be conducted personally by the Superintending Engineers.

(c) Failure to pass the initial examination render the employee concerned ineligible for confirmation. Further, no employee shall receive promotion to a higher grade without passing the oral examination prescribed for that occasion, and also a practical examination, if so required, by the Examiner

17 "Inability to obey orders"—If for any reason an order cannot be carried out, the authorized person from whom it was issued shall be notified immediately.

2.18 "Sub-Station Order Book"—All telephone message, instructions and orders relating to Switching operations, issue of permits-to-work and other important communications shall be recorded and initialed by an authorized person in the Sub-Station Order Book, From F-SC, together with the time and date when sent, and date when received, and shall be repeated on the telephone by the receiver to the sender for confirmation by telephone immediately the former has entered up the message, instructions or order. In general, all telephone messages shall be accurate in detail and concise.

2.19 "Sub-Station Log Sheet"—The sub-station operator shall strictly keep his sub-station Log Sheet Form G-SC carefully entered up at the exact times through out day and night recording therein all happenings, including all meter and instrument readings and switching operations. Similarly other log sheets will be kept up-to-day by other authorized employees.

2.20 "Filling in Forms"—(a) Form A-SC to G-SC, inclusive, and all other authorized forms shall be carefully and legibly filled in ink, Any attempt to erase an entry and from will render the employee who does it liable to instant dismissal, and no employee shall accept a form from another on which there are indications of erasure.

(c) In cases where it is necessary to correct form, such corrections shall be made by striking out the words cancelled by an ink line, leaving the cancelled words still legible, and this cancellation shall be initialed by the employee making it. Insertions on a form shall similarly be made in ink and be initialed.

2.12 "Access to Electrical Apparatus"—No unauthorized person shall the permitted to have access to or a form shall similarly be made in ink and be initialed.

2.22 "Authorized person in charge of shift, unfit in duty"– If there is no employee available who can take authorized charge, an authorized person in charge of shift who feels sick for a duty shall immediately telephone for relief. Unless such a step is taken illness as an excuse for neglect of duty shall not be recognized.

2.23 "Permits of work"---

(a) No person shall carryout any work on or in proximity of an equipment apparatus or line unless the man in direct and immediate in charge of the work has the necessary written permit for work. Even when the person himself competent to issue the permit for work, a permit shall be made out and issued himself.

(b) Permit for work shall be taken only by authorized persons from authorized person's in charge of operation. The same person who took the permit shall return it.

(c) When written permits cannot be given, taken, "line clear" should be given and taken by phone. In such cases, substance thereof shall be repeated by the person who receives the "line clear" message and shall be confirmed by the sender of the message to ensure that both the parties are quite clear as to its purpose. These instructions shall be recorded in Permit-to-work Books at both the sending and receiving ends. The duplicate copies of "line clear" permits shall be sent by post as soon as possible for record at either end, after duly canceling the same.

(d) When work is done on remote controlled gear such as Switchgear or tap changer or while testing relays etc. the authorized person issuing permit-to-work will remove all fuses/links from control and trip circuit and will see that the mechanism is blocked where necessary to prevent accidents of mechanical nature. After completion of work, fuse/links will be replaced. Entry of removing the fuses/links and replacing the same will be made on permit-to-work.

2.24 "Caution Notices"—

(a) After a circuit has been made dead and earthed, caution Notices, From E-SC (Copy attached), duly filled in and signed, shall be placed on all switchgear and control panels controlling electric supply lines or other electrical apparatus upon which men are about to work. These notices shall be placed by the authorized person issuing permit to work in the presence of the Junior Engineer in the case of work on an electric supply line, and they shall not b removed except in the presence of the authorized persons in charge of the working parties.

(b) Electrical apparatus and Electric supply lines guarded by Caution Notices shall not be made live again until all the Caution Notices of the circuit have been duly removed in the presence of the authorized persons in charge of the parties who have been working on the electrical apparatus or Electric supply lines.

(c) To prevent their being torn or dropping off the apparatus guarded, Caution Notices must always be placed in the wooden holders provided for the purpose.

(d) When more than one party of men are working on a section of an electric supply line made dead for the purpose, each Junior Engineer-incharge of each party shall have his own duly signed Caution Notices on all switchgear and control panels controlling the section, and none shall be removed except in the presence of the Junior Engineer to whom the Caution Notice belongs, when it shall be duly completed and signed.

2.25 "Danger Notice"---

(a) Danger Notice, From D-SC (Copy attached) shall be placed by each authorized person incharge of a party working on apparatus which may be temporarily unguarded or repair and is live or liable to become live accidentally or otherwise. Such Notices shall be removed only by the authorized person who placed them.

(b) To prevent their being torn and dropping off the apparatus guarded, Danger Notices must always be placed in the wooden holders provided for the purpose.

2.26 "Possession of Switchgear Keys"----

(a) The authorized person in charge of work on electrical apparatus or electric supply lines shall keep in his possession the keys of the locked in earthing switches controlling the electrical apparatus or electric supply lines he is working on, until completion of the work.

(b) Where the geographical separation of the controlling sub-station of an electric supply line makes this impracticable, the keys of the locked in earthing and locked-out isolating switches controlling the electric supply lines at the remote to work who shall duly record this on Form C-SC.

(c) It cannot be too strongly emphasized that the earthing of a circuit at one end only affords no protection to men working on it, should the circuit be made alive from the other end.

(d) When an Electric supply line is controlled by switchgear equipped with Castel locks, an authorized person, before proceeding from the line sub-station with his men to work on the line, should padlock the Castel key lock covers on the isolating and earthing switches, after the line has been duly isolated and made dead by these switches, and take his padlock keys away with him, leaving the released Castel keys of these switches in the custody of the Sub-Station Operator. This will give security to the men working on the electric supply line, while enabling others to work at the same time on the isolated switchgear.

(e) When the geographical separation of the controlling sub-stations and the site of work on an Electric supply line makes this impracticable, the authorized person incharge of the controlling sub-station should padlock the Castel key covers on the line isolating and earthing switches after the line has been duly isolated and made dead by those switches and take the padlock keys into his personal custody, before any permit-to-work is issued by telephone. He shall duly record on Form C-SC that the padlock keys are in his personal custody.

(e) A set of numbered Padlock will be specially provided for locking off switches and these locks will be with non interchangeable keys. Two keys for each padlock shall be provided, one to be the key for normal use and the other to be spare key.

The key for normal use shall have securely attached to it a round brass label with the number of padlock boldly stamped on it. The spare keys shall have securely attached to it a square brass lable also boldly stamped with the number of padlock. The padlock meant for switches together with the normal keys shall be kept on hooks in a cabinet to be installed in the control room. The spare keys will be kept in the possession of Sub-Divisional Officer, Sub-station Engineer or Resident Engineer incharge of the Sub-Station and Power House as the case may should not be used in this labeling as these lead to confusion.

2.27 "Maintenance of Carrier Telephone system"-- The Satisfactory operation of carrier telephone system installed is very essential to ensure safety in switching operations. The carrier telephone equipment will be maintained properly by the Executive Engineer Carrier or other authorized employee. If Power Controller or Substation Engineer finds a line busy when he has to give switching operations he will request for immediately clearing the line for switching operations. The employees disregarding the above request will render themselves liable to dismissal.

CHAPTER-3

EARTHING

3.1 "Live Apparatus"--- All Apparatus must be regarded as being live and a source of danger, and treated accordingly, unless it is positively known to be dead and properly, earthed.

3.2 "Earthing of Electric Supply Lines"---

(a) No work must be commenced on extra high, medium or low pressure electric supply lines until the conductors at the place where the work is to be carried out have been short circuited and effectively earthed. Earthing sticks and equipment are provided for this purpose and must be used in all cases . (See paragraph 4.2 regarding working on live medium and low pressure electric supply lines).

(b) Short circuiting the conductors only will not be tolerated, earthing devices must be used in every case, and when the conductors are cut, earthing devices must be used on both sides of the cut.

(c) The Sub-Divisional Officer in the case of local distribution systems, and the Power Controller/Assistant Power Controller in the case of the main trunk and branch electric supply lines (see Chapter 1 and Chapter 6) responsible for making all arrangements for making the circuit to be worked on dead, isolated from all live conductors, and earthed at all substation concerned.

(d) Never assume, that a circuit has been made dead, isolated and earthed on a line of towers or poles upon which you are to work and any other circuit on the line must necessarily be dead also.

(e) No H.T. line shall be approached and grounding attempted unless satisfactory arrangements have been made so that the lines at the point in question may be grounded.

The circuit or conductors to be worked on shall be made dead by switching off, and locking the switch in the "off" position so that no one can make the circuit or conductors alive till the work is finished.

After switching off the supply and before touching the lines every one of the conductors shall be tested for pressure by a discharge rod. The discharge wires should be kept two feet (o.6 metre) away from the employee. This precaution is taken to make sure that the line to be worked on is actually the line that has been isolated and intimated as clear. Rubber gloves should be used on both hands. All the conductors should then be short circuited and adequately earthed.

Where there are other lines on the same or nearby pole, all the lines crossing or ending at these poles shall be earthed, unless work on one line with any or all the remaining lines is permissible and is so specified in the permit-to-work.

Special care should be taken to see that only the concerned circuit is approached. When number of different circuits are running in the same vicinity, great caution should be used in approaching the right circuit and reference may be made to circuit No. or colour code of the line (if any code scheme is available).

3.3 "Location of Local Earths"---

(a) Where a circuit of an electric supply line has duly been made dead and earthed at the controlling Sub-station, the authorized person incharge of the working party must make sure before any man touches any of the conductors that local earths have been located between all likely sources of power and the point at which the work is to be done.

(b) Local earths shall be placed on towers or poles on each side of the tower or pole where work is to be done. At river crossings, ravines and special structures, this is not always feasible, because it is difficult in such cases to get to adjacent towers. In such cases the earths may be placed out on the line conductors as far as possible on each side of the tower where the work is to be done.

3.4 "Earthing of Electric Supply Insulated Conductors"--- Before working on dead medium or low pressure electric supply insulated conductors, the following method shall be used to earth the line to be worked. The line must first be disconnected at its fuses, cut-outs, or other apparatus, and then earthed on the dead side of such fuses, cut-outs or other apparatus. At 0.8 km. intervals along the route a permanent earth pipe will be put down, the covering taken off the conductors permanently and the pole marked with distinguishing mark, showing that it is an earthing pole.

3.5 "Placing Earhts"--- The earthing device shall first be connected to an effective earth provided for the purpose, and other end of the earthing device shall then be connected to the conductors of the apparatus to be earthed.

3.6 "Removing Earths"—Shall be carried out in the reverse order to that adopted for placing them; that is, the end of the earthing device attached to the conductors of the earthed apparatus shall be removed first, and then the other end connected to earth shall be removed last. Do not touch may conductor after the earthing device has been removed from it.

3.7 "Static Condensers"—Before working on static condensers or underground cables, they must be discharge them, use an earthed wire and make contact with it to each terminal, in turn repeatedly. Heavy sparks will be drawn from them, if they are charged.

3.8 "Earthing in Power Stations and Sub-stations"—Conductors in electrical apparatus before being touched shall always be earthed. This shall be done with the earthing connection provided by making good contact between it and the conductors, after the end of the earthing connection has been connected solidly to the power house or sub-station earthing system. When earthing polyphase equipment, all phases shall be earthed. Both ends of the earthing connection shall be securely fixed (see also paragraphs 3.5 and 3.6 regarding the placing and remove of earths).

3.9 "Testing Permanent Earths"---

(a) Rule 61 of India Electricity Rules, 1956 stipulates that the frame of event generator, stationary motor, portable motor, and the metallic parts (not intended as conductors) of all transformers and any other apparatus used for regulating or controlling energy and all medium voltage energy consuming apparatus shall be earthed by the owner by two separate and distinct connections with earth.

Rule 90 stipulates that all metal supports, and all reinforced and pre-stressed cement concrete supports of over-head lines and metallic fittings attached thereto, shall be permanently and effectively earthed.

Rule 92 stipulates that the owner of every overhead line which is so exposed as to be liable to injury from lightning shall adopt efficient means for diverting to earth any electrical surges due to lightning.

These are the precautions to avoid danger to employees and the public and it is essential that all such permanent earths are maintained with as low resistance to earth as possible.

(b) The earthing of all apparatus and supports of electric supply lines referred to in sub paragraph (a) above shall be periodically inspected and tested, and repaired where necessary, by an authorized person at least twice a year. An approved "Megger" earth tester shall be used for testing permanent earths and erathing systems with separate potential and current temporary earths. These temporary earths shall be made by an earthing rod driven at least 1.5 metre into the ground and when measuring the earth on lattice steel towers the earth connection should be made to the bottom panel of the tower.

(c) The following resistance to earth must be maintained and if, upon testing earths, its resistance is found to be higher than given below the faulty earthing device must be repaired at once and the resistance brought down to be the stipulated Value:-

Apparatus	Maximum resistance to earth in ohms.
(1) Power station and sub-station earthing systems	2.0
(2) Lattice steel towers on 66KV, 132 KV, 220 KV & 400 KV Transmission lines	10.0

3.10 "Earthing Devices for Electric Supply lines"---

(a) None but approved earthing device shall be used in earthing electric supply lines.

(b) The following is the standard earthing equipment required by each party of men working on high and extra high pressure electric supply lines carried on lattice towers :-

(i) Two sets of three earthing sticks, fitted with metal head designed for attaching to the line conductors, and each set connected by three specially insulated, flexible earthing wires (minimum size 19/1.32 mm, annealed copper), of not less than 6.40 metre in length, to a special earthing clamp designed for clamping and earthing the flexible wires to a leg member of the steel tower structure. The earthing stick must be made of impregnated wood not less than 1.27 metre in length and 3.20 cm. diameter or of bamboo in two parts of 1.52 metre and 1.57 metre in length, respectively to be coupled together for use and must not be less than 2.86 cm. in diameter.

(ii) Two extensions of specially insulated, flexible earthing wire (minimum size 19/1.32 mm., 26 sq.mm. annealed copper) of not less then 9.15 metre in length and fifed at each end with an earthing clamp.

(iii) Two pointed metal earthing rods, fitted with clamps to take the earthing wires, for driving into the ground to obtain an independent earth, where necessary.

(iv) "Strong light, handlines and safety belts" --- Handlines should always be dry.

(c) The following is the standard earthing equipment required by each party of men for working on high and extra high pressure electric supply lines carried on poles with a ground wire.

Two earths of three earthing sticks, fitted with metal heads designed for attaching to the line conductors and each set connected by their specially insulated flexible earthing wires (minimum size 19/1.32 mm., 26 sq. mm. annealed copper) of not less than 1.83 metre in length, to a fourth stick of similar earthing design for attaching to the ground wire.

When using the earthing sets it is important that all the earthing sticks should first be hooked to the ground wire. Secondly, the ground wire earthing stick should be firmly secured to the ground wire. Thirdly, earthing stick should then in turn be hooked firmly to each conductor until all the conductors and earth wires are solidly grounded and short circuited through this device.

While handling the earthing sticks, rubber gloves should always be used for safety.

(d) For earthing single circuit transmission lines, high frequency coils may be used to ensure non interrupted speech, where carrier communication facility is available.

3.11 "Placing Earths on Steel towers"---

(a) Before a lineman/Asstt. Foreman is instructed to earth the line the junior Engineer incharge of the work should be in possession of the switchgear keys (paragraph 2.27) and permit-to-work informing him that the electric supply line on which he is about to work has been duly made dead, is isolated from all live conductors and is earthed at all sub-stations concerned.

The Lineman/Assistant Foreman, carrying his light handline, should mount the tower, take his position on the middle cross-arm (where possible) close to the tower securing his safety belt to the main leg of the tower and hoist the earthing sticks closely bound together. He should then place earthing clamp on the near tower leg, just above the middle cross-arm, and unfurl the wire from the sticks allowing them to hang down the inside of the tower.

(c) From a position on the outside of the tower between the top and middle cross arms the lineman, keeping clear of his earth wires, should proceed to place the earthing stick on the top line conductor, approaching the conductor cautiously. As he descends the tower he should earth the middle and bottom line conductors in a like manner.

3.12 "Removing earths on steel towers" –

(a) The Lineman, & A.F.M. under the instructions of the Junior Engineer shouldr remove earths from the line conductors (paragraph 3.11) as he ascends the tower starting at the bottom conductor proceeding to the middle conductor and ending with the top conductor.

(b) The earthing sticks shall then be coiled, and the earthing clamp removed last, just before lowering the sticks to the ground.

(c) Before the disconnected earthing sticks are coiled for lowering they must be

left hanging down on the inside of the tower to prevent them from blowing into the line conductors.

(d) The lineman/ Assistant Foreman must coil up the earthing sticks securely and not remove the earthing clamp until he is ready to lower them to the ground.

(e) When hoisting and lowering earthing sticks, a dry handline should always be used.

3.13 "Repariring Underground Cables"—Before repairing an underground cable all its conductors shall be effectively earthed at both ends, and before cutting the cable a steel wedge shall be driven through it at the point where it is to be cut.

CHAPTER-4

WORKING ON LIVE APPARATUS

4.1 "Extra High Pressure and High Pressure Apparatus"—Where it is necessary to Work on live apparatus (or apparatus which may in proximity of or contain or embody live conductors), to avoid interrupting the supply, the work should be carried out only by Hot Line Gang. If the Sub Divisional Officer incharge of Hot Line operation is not confident of doing the work safely, he shall not commence the work but shall notify the person incharge of Sub-Station or Power House or Transmission Line who shall then be responsible for making suitable arrangements to enable the work to be proceeded on "Dead Equipment" without danger. It will entirely be the responsibility of Sub-Divisional Officer incharge "Hot Line" that each working man is provided with safe and insulated tools. The work will not be done in unfavourable weather conditions. A definite plan of the work to be done will be prepared by Sub-Divisional Officer or Junior Engineer incharge before hand and will be discussed with the lineman and other employees. Sub-Divisional Officer or Junior Engineer incharge will have a certificate of Hot Line Training and will be personally present when the work is done.

The intimation of the nature of work to be done on live apparatus of 66 K.V. and above should be given to the Power Controller HPSEB in the from of a telephone message from the Engineer Incharge of the Sub-Station or the Transmission Line before the work is taken in hand.

4.2 "Medium and Low Pressure Apparatus"----

(a) Except in very exceptional cases, the conductors of all medium and low pressure apparatus and lines i.e. electrical apparatus and power distribution lines operating at pressure of 230 to 250 volts to earth, or 400 to 440 volts between phases, shall be made dead and earthed at the place where the work is to be carried out, as described in Chapter 3, before an employee is permitted to work upon them. However, in rural areas in no case an employee shall be permitted to work upon live lines single handed.

(b) Whenever it is necessary for an employee to work on live medium or low pressure apparatus or distribution lines, he shall invariable either wear rubber gauntlets, or use other approved insulated tools, provided for the purpose; and as an additional precaution, he shall stand during the work upon an insulated stool, platform or tower wagon, or rubber mat, or wear rubber boots provided for the purpose, as the nature of work may require.

(c) Immediately before starting work, rubber gauntlets, if used, shall be thoroughly examined to see whether they are in sound condition. Under no circumstances shall an employee work with unsound rubber gauntlets, mats, stools, platforms or other precautionary devices. The ladders where used shall be properly tied with pole at the top before commencement of work.

(d) Medium or low pressure fuses of greater than 30 amperes capacity shall not be replaced, after rewiring or any other cause, until the circuit into which the fuse is to be installed has been made dead.

(e) Work on the L.T. lines running below H.T. lines shall not be carried out unless there is an effective earth screen between H.T. & L.T. lines or , in the absence of such a screen, unless the H.T. line is switched off or unless, in the opinion of the Assistant Engineer incharge, the work is otherwise safe. Such an opinion of the Assistant Engineer must be recorded by him in writing in the note book of the subordinate incharge of the work.

(f) Any line or apparatus where in the pressure does not exceed 250 volts to earth may be worked on alive by an authorized person, provided the person uses a safety belt and wears rubber gloves or gauntlets and has not to push any part of his body, except that portion of the arm protected by gauntlets, through any line other than that worked on, and is accompanied by at least one assistant.

(g) The staff while working on wooden poles should check the condition of pole by hammering process.

4.3 "Using Operating Rods"— Rubber gauntlets must always be worn when using wooden operating rods for removing high or extra high pressure fuses, or for opening high or extra high pressure isolating switches.

4.4 "Contact with Live Conductors"—Every precaution must be taken to avoid contact between one's person and live conductors operating at 230 volts and above. Rubber gauntlets and rubber gloves are provided as a precaution against accidental contact or leakage, and not as providing immunity from danger when touching when used without any additional precaution, live conductors operating at 230 or 400 volts. Employees, even when wearing rubber gauntlets are forbidden to touch live conductors operating at pressure above 400 volts.

4.5 "Attendance when working on Live or Dead Apparatus"- When an employee is working on live apparatus or conductors he should always be accompanied by atleast one employee capable of rendering first aid in case of accidental electric shock and calling for immediate assistance.

4.6 "Stringing Conductors near Live Lines"—Employee must wear rubber gauntlets when stringing new conductors near existing live conductors.

4.7 "Rubber Gauntlets"—Rubber gauntlets must not be assumed to have covered the hands with "insulating material" as defined in paragraph 1.5.

4.8 "Safety Belts"--- Safety Belts shall be used when working on poles in the vicinity of live conductors.

4.9 "Handlines"—Handlines shall be used when hauling material up above live conductors.

CHAPTER-5
WORKMEN'S SAFETY DEVICES

5.1 "Safety Devices"—

(a) Gauntlets, gloves, mats, boots and galoshes, insulated platforms and stools safety belts, handlines and other special insulated devices shall be used, as required, by employees working on electrical apparatus and electric supply lines, as a precaution against accidental electric shock.

(b) Pliers and other tools insulated with brittle material, or otherwise liable to have the insulation damaged when in use, shall not be used.

5.2 "Assistant Foreman/Linemen's Clothing"—

(a) Assistant Foreman/Linemen should avoid the use of overalls, dungarees, jumpers, and coats having metal buttons, metal straps and similar metal fittings. Bone buttons should be used in every case. Buttons should be sewed in place with thread. Loose clothing should not be worn.

(b) Assistant Foreman, Linemen working on live conductors should not roll up their sleeves, as dry cloth gives some protection against shocks.

(c) Assistant Foreman/Linemen should not wear shoes with nailed soles. Shoes should have sewn soles.

(d) Assistant Foreman/Linemen should not wear caps covered with metal buttons or any metal adornment.

(e) Assistant Foreman/Linemen should not wear suspenders and armbands with metal buckles or other metal parts. They might come close to live parts and cause serious, if not fatal injury.

(f) Assistant Forman/Linemen should not wear rings of any kind while they are working on a pole near lines or apparatus which may be live.

(g) Metal keys chains, or metal keepers for key rings or watch chains should not be worn on the outside of clothing. There is always a possibility that they may come into contact with live conductor or live apparatus.

5.3 "Care of Rubber Gauntlets"—

(a) An employee should not put his rubber gauntlets or gloves into his coat or trouser pockets alongwith tools and line material. Gauntlets carried in this way are liable to damage and consequent danger to the wearer.

(b) After rubber gauntlets and gloves have been in use they must be carefully cleaned at once and stored in French Chalk in a suitable container. No tools or other material shall be stored in this container.

5.4 "Testing Rubber Gauntlets"---

(a) Upon each occasion, before an employee puts on his rubber gauntlets or gloves to start work on a new job, he must test each one mechanically for cuts, cracks and weak spots by rolling it up tightly, beginning at the gauntlet and notice if any air escapes. This is usually called an "air" test. Gauntlets or gloves which show visible cuts, cracks, or weak spots or air leakage in this test, shall not be used for protection, and must be returned and a new pair obtained from stock.

(b) Every pair of rubber gauntlets and every pair of rubber gloves shall be carefully examined at least once a month by an authorized person and be passed for or rejected from further use by him.

5.5 "Durability of Rubber Devices" – Great care must be exercised in seeing that only sound rubber gauntlets, gloves, mats, boots, galoshes and other safety devices depending upon rubber insulation are issued to employees for working on live apparatus.

5.6 "Leather protecting Gloves"—

(a) Protective leather gloves may be worn over rubber gauntlets when wires are being spliced, when solder is being handled, when it is necessary to move about a lot during working, when live wires are being tied on to insulators, and when any other work is being done which might render the gauntlets liable to injury and consequent danger to the wearer.

(b) Rubber gloves or gauntlets should not be used when going to and coming from work on ground jobs where there is no possibility of accidental contact with ground wires, while climbing up or down lower part of pole below the lowest cross arm, etc.

5.7 "Periodical Inspection of Safety Devices"—

(a) Insulated platforms and stools, rubber mats and other special safety devices (except rubber gauntlets, gloves, boots and galoshes) shall be inspected and tested by an authorized person at least once every six months.

(b) Rubber gauntlets, gloves, boots and galoshes shall be inspected and tested by an authorized person at least once every month, and also be inspected immediately after use.

(c) Safety devices found defective upon inspection shall be repaired immediately. If it is not possible to effect repairs satisfactorily, the defective shall be destroyed at once.

5.8 “Responsibility in using Safety Devices”-

The employee working on electrical apparatus and electric supply lines shall be held responsible for not using, in a proper manner, the safety devices provided.

5.9 “Measuring Tapes and Rules”—

(a) Metal rules, metal measuring tapes, cloth rules or cloth measuring tapes with metal or wood rules with metal stands, or wood rules with metal fittings must not be used. Suitable rules and tapes containing no metal parts will be provided.

5.10 “Tools and Plants for Hot line working”---

These tools and plant will be stored properly by Sub-Divisional Officer, incharges Hot lines. All items will be thoroughly examined by him or Junior Engineer incharge before and after use. Once in six months all the items will be inspected by the controlling Executive Engineer. If any item is found to be defective, it will be repaired immediately. If it is not possible to effect repairs satisfactorily, the defective devices shall be destroyed at once.

CHAPTER-6

SWITCHING OPERATION

6.1 (a) Switching operations on all 400 K.V., 220 K.V., & 66 K.V. Trunk and Branch Transmission system and on the secondary side of step down transformers directly connected thereto shall be under the charge of Power Controller or Assistant Power Controller and no switching operations at the Power Station and Sub-Station on these systems shall be undertaken except under his direct instructions.

(b) Switching operation on all 33K.V, 22 K.V., 15 K.V., 11 K.V., and 2.2 K.V. Switchgear other than the switchgear on the secondary side of the step down transformers and on all lower voltage switchgear shall be under the charge of Sub-Divisional Officer or Sub-Station Engineer responsible for the maintenance thereof.

(c) The Sub-Divisional Officer incharge of maintenance of switches controlling the supply to overhead lines or to consumers situated within the sphere of duty of any other Sub-Divisional Officer shall not interrupt such supplies, except under fault conditions, without the knowledge and prior consent of all other Sub-Divisional Officers, concerned. Such consents may be confirmed in the Sub-Station Order Book as instructed in paragraph 2.18 or by letter. When such an overhead line or distribution area has been made dead, the switch controlling the supply to the same shall not again be closed until all Sub-Divisional officers concerned have returned all permits-to-work (See Paragraph 6.3) and have been informed that the line is about to be re-energized.

(d) When the Sub-Divisional Officer incharge of the maintenance of overhead lines or distribution areas, the supply to which is controlled by a switch under the charge of another Sub-Divisional Officer, desires the supply to be made dead he shall apply to the Sub-Divisional Officer incharge of the switching operations of the switch or switches concerned after obtaining the prior consent of any other Sub-Divisional Officer involved. Such consents shall not be withheld unreasonably but must be subject to the reasonable convenience of the consumers concerned. All applications for such consents should be recorded in writing either in the Sub-Station Order Book as instructed in paragraph 2.18 or by letter.

(e) If any consent is withheld unreasonably, an appeal should be made to the Executive Engineer incharge of division concerned.

6.2 "Switching Operations by Power Controller"—

(a) When it is necessary to make any apparatus dead for inspection or repairs, Executive Engineer concerned, or his authorized representative, shall notify the Power Controller on Form A-SC.

(b) If load condition prohibit the proposed operation, the Power Controller will return the form A-SC marked "Cancelled", otherwise he will issue form B-SC, (copy attached) to the one or more Sub-Station Operators responsible for the necessary switching operations and issue of the permits to work (paragraph 6.3) and switchgear keys (paragraph 2.26).

(c) After completion of the operation all forms B-SC and C-SC (a), (b) and (c) duly filled in and signed, shall be returned by the Sub-Station Operator (or Operators) to the Power Controller.

(d) When the work has to be carried out at a short notice, telephonic instructions may be necessary in the first instance, but in such cases these instructions shall be confirmed immediately on the standard Form A-SC and B0-SC, and the telephonic instruction shall follow the same sequence and procedure and comprise the same information as required by these forms. Special attention is drawn to the necessity or recording all such telephonic instructions in the Sub-Station Order Book as instructed in paragraph 2.18.

(e) Apparatus which has been made dead and earthed shall remain dead and earthed at all sub-stations involved, until the Power Controller issues the necessary instructions to make the apparatus live again. But the Power Controller shall not request the apparatus to be unearthed and made live, until he has been personally of the work that they have duly returned their permit to work (Form C-SC), duly completed and signed on the clearance certificate part of the permit to work and also the switchgear keys.

6.3 "Permit to work"---

The permit to work From C-SC (Copy attached) is printed on white brown and green paper respectively for use as follows:

(i) White Form C-SC (a)---- For work on electrical apparatus in sub-stations and power stations; on single circuit 400 K.V., 220 K.V., 132 K.V., 66 K.V., 33 K.V., 22 K.V., 15 K.V., 11 K.V., 2.2 K.V., trunk and branch electric supply lines; 400 volts and 230 volts local distribution electric supply lines.

(ii) Brown Form C-SC (b) --- For work on circuit No. 1 of double circuit electric supply lines, voltages 400 K.V., 220 K.V., to 2.2 K.V., inclusive.

(iii) Green Form C-SC – For work on circuit No. 2 of double circuit electric supply line, voltage 400 K.V., 220 K.V., to 2.2 K.V., inclusive.

6.4 "Switching Operations by Sub-Divisional Officers"---

(a) Sub-Divisional Officer will not use forms A-SC & B-SC in connection with the Switching operation on 33 K.V., 22 K.V., 15 K.V., 11 K.V., 2.2 K.V., 400 Volts and 230 Volts local distribution systems under their control.

Sub-Station Operator or Control Room Operator incharge of the sub-station or the Junior Engineer will personally attend to all switching operations after obtaining the instructions from Sub-Divisional Officer or from Senior Junior Engineer in the absence of the Sub-Divisional Officer and personally issue the permit to work Form C-SC (a,b,c, as required) and Switchgear Keys (paragraph 2.26) before men are permitted to work on electrical apparatus and electrical supply lines on these System.

(b) "Permit to work" Form C-SC. (a,b,c, as required) when issued to more than one person work on one electric apparatus and electric supply lines, separate permits may be issued and cross reference be given on each permit so issued.

The electrical apparatus and electric supply lines on which the permit has been issued shall remain dead earthed until all permits are cancelled and Clearance Certificate is received from the authorized persons incharge of work and necessary note to this effect given on P.T.W.

(c) Apparatus which has been made dead and earthed shall remain dead and earthed at all sub-station involved, until the Sub-Divisional Officer issues the necessary instructions to make the apparatus live again. But the Sub-Divisional Officer shall not request the apparatus to be unearthed and made live, until Control Room Operator or Sub-Station Operator or Junior Engineer, as the case may be, has personally received from all the authorized persons incharge of work their permit-to-work (Form C-SC), completed and signed on the clearance certificate part of the permit-to-work, and the switchgear keys.

6.5 "Switching Operation under Fault Condition"—

(a) When a switch controlling a transformer or a generator trips through differential or Earth Fault Protection or Buchholz Protection (in case of transformer), the controlling switch or switches should be reclosed only after ascertaining that there is no fault in the transformer or generator.

(b) When any switch controlling a radial line trips on over current or Earth Fault or Distance protection, it may be reclosed twice.

(c) In case of tripping on inter-connected line no reclosing should be tried without the permission of Power Controller or Assistant Power Controller. He may be contacted on carrier telephone or on P&T Telephone, if necessary. He will get the switches closed after synchronizing the system.

(d) In case of any trippings on 132 K.V. switches controlling any transformer on any one 132 K.V., O.C.B. in the mesh may be closed under the instruction of local Sub-Station Engineer or Sub-Divisional Officer to restore supply. The other 132 KV OCB will be closed under the instruction of Power Controller or Assistant Power Controller.

(e) The switches should be reclosed after two minutes. Although, in certain cases the relaying time and tripping times of the switch may be very less, and the switch may be of auto reclosing duty type, it is advisable that when reclosing manually it should be done after two minutes as it gives opportunity to observe the severity of fault, relays involved to cancel the alarm and to reset the tripping relays.

If on reclosing, the switch or switches trip again, Power Controller or Sub-station Engineer or Sub-Divisional Officer may be informed as the case may be Simultaneously the action may be taken by the authorized person to investigate the fault.

6.6 "Custody of Completed Forms"---

(a) Completed Forms A-SC, B-SC, and C-SC (a,b, and c) shall not be destroyed and these used in connection with Switching operations under the control Power Controller shall be carefully filed and kept in his custody; completed Forms E-SC used in connection with these switching operation shall be carefully field and kept in the custody of the respective Sub-Station Operators.

(b) Completed Form C-SC (a,b, and c), E-SC shall not be destroyed, and these used in connection with Switching operations under the control of Sub-Divisional Officers shall be carefully filled and kept in the custody of the respective Sub-Divisional Officers.

6.7 "Giving, Receiving and Complying with Switching Instructions"—

(a) The giving of switching instructions and taking down the same is a matter of considerable importance. The message containing instructions should be delivered by Power Controller, or Assistant Power Controller or Sub- Divisional Operator or Sub-station Operator on duty. In case Sub-station Engineer or Sub-Divisional Officer is not available, Shift Engineer or Sub-station operator on duty will deliver the message. This is essential so that errors are avoided which cree if the message is delivered by telephonist.

(b) Before a message is given, the Engineer must give the matter due consideration, he must have a picture of the requirements in his mind and in the massage that picture should be projected. Not only the operations but also the purpose of operations should be stated. A good message will contain too much rather than too little.

(c) Power controller or Assistant Power controller or Sub-station Engineer or Sub-Divisional Officer will write his instructions before dictating over the telephone. This gives him opportunity to check his initial intentions. The recipient of the message will carefully write down the instructions as received and repeat back for checking. Sometimes difficulties occur over similar sounding letters and figures such as 'C' and 'D' or 'Five and Nine'. All such discrepancies should be clarified on telephone.

(d) When switching instructions have been received, written down and repeated back and approved, the receipient recall the purpose of instructions. If there is any doubt, he must refer back to instructor.

(e) Switching operations involve co-operation of instructor and receipient. To reduce errors, more people should not be associated. Telephonists should therefore not be asked to speak out the instructions. They may however record the message in the book.

(f) Before doing actual operations, a true copy of the written instructions may be kept for reference immediately before implementing the order. For example it is very easy for a person to allow his memory to let a number '103' become '301'.

(g) Pause just before executing any operations, refer to the written copy, check that you are on the right circuit, observe appropriate meters, these sensible measures are very effective safeguards.

CHAPTER-7

REPORTING

7.1 "Working Condition"—

(a) On completion of switching operations, report should be sent immediately to Power Controller or Assistant Power Controller or Sub-Station Engineer.

(b) All abnormal occurrences or suspicious conditions should be reported for immediate attention.

7.2 "Fault Condition"—

Where there is an alarm, be clam, cancel the audible alarm as soon as possible, see whether any switches have operated and if so which ones. See relay flags. Observe carefully and report full facts. Correct report will be very valuable for taking best possible subsequent action but incorrect report will cause confusion and may lead to wrong decision. Make yourself familiar with significance of alarm and how to stop these. Know the normal operated conditions of relay flags and check the flags at the start of every shift. Do not rest the relay flags unless the same have been recorded.

7.3 "Report regarding changes in layouts"—

Whenever any work involving changes of temporary or permanent nature in the layout of substations or transmission lines of 66 K.V. and above is carried out due to augmentation, action of design or due to any other reason, a completed message conveying all such changes made should be immediately sent to the Power Controller after the work is completed by the Engineer incharge of the Sub-station or the transmission line. The message should be confirmed in writing and drawing incorporating the changes made should also be sent.

CHAPTER-8
WORK ON ELECTRIC SUPPLY LINES

8.1 "Local Earthing"—

(a) Before commencing and for the whole time the work is being performed on an electric supply line (except in the special cases mentioned in Chapter-4), the electrical supply line shall be earthed at the place where the work is being executed. The earthing shall be carried out in accordance with the instructions contained in chapter-3 and under the supervision of the Junior Engineer or other authorized person in charge of the working party, who shall have in his possession a duly issued permit-to-work informing him that the circuit of the electrical supply line upon which he is to work has been duly made dead. Is isolated from all live conductors and is earthed at all Sub-stations concerned; he shall also have in his possession the keys of controlling switchgear (paragraph 2.26).

(b) Every working party shall be protected by independent local earths, and the authorized person-in-charge of the working party or parties shall be responsible in seeing that this instruction is carried out.

(c) All local earths shall be removed, after the completion of the work, in accordance with the instructions contained in Chapter-3 and under the direct supervision of the authorized person in charge of the working party.

8.2 "Raising and Lowering Tools and Materials"

(a) Handlines must be used for raising and lowering tools and materials on towers and poles and must be exercised not to make contact with live parts. Tools and materials must not be dropped from the tower or pole, nor must they be passed over live wires.

(b) Handlines should be kept dry.

(c) Where work is being carried out on electric supply lines adjacent to or crossing telegraph, telephone, or railway signal lines every precaution shall be taken by Junior Engineer and other Employees to prevent conductors, tools and other material from coming into contact with the telegraph, telephone or railways signal lines during the work upon which they are engaged.

(d) Supervising officials should regularly examine safety belts, tools, ladder, rubber gloves, earthing devices and the like to see that they are in good conditions and if they are not found in good order, the supervising officers should ensure that the defects are removed atonce.

8.3 "Ladders and Other Supports"—

(a) All ladders must have a suitable piece of light rope at the top end , and they must always be tied to the pole or other structure by means of this rope.

(b) All ladders should be so placed that the horizontal distance from the point of support to the foot of the ladder should not be less than one fourth of the length of the ladder and shall not be more than one half of the length of the ladder.

(c) Before climbing tower, poles, ladders, scaffolds or other elevated structures an employee must first assure himself that the tower member, pole ladder, scaffold, tree, cross-arm, messenger-wire, cable or any other support used is strong enough to carry his weight safely.

(d) No employee is expected to climb any structure whatsoever which in his opinion is unsafe.

(e) No ladder used on a pole must reach above lowest power cross-arm, and sufficient clearance must be obtained to allow electric supply line work to be done from below the cross-arm. One's head & shoulders must not project above the line worked upon. Under no circumstances shall an employee stand or sit on a low or a medium pressure cross-arm, when live high or extra high pressure lines are above him.

(f) Ladders must not be set up on lorries which may be steered while an employee is working from them unless satisfactory precautions have first been taken.

(g) Ladders must not be sep up on slippery, oily or sloping ground.

(h) Ladders must not be set up in a pathway or roadway exposed to traffic unless an employee is stationed at the foot of the ladder to warn the traffic.

8.4 "Patrolling Electric Supply Lines"—

(a) Standing orders will be issued to each lineman/Asstt. Foreman or other employee engaged on patrolling electric supply lines and his signature must be obtained for the receipt of the orders. These orders will contain an instruction that under no circumstances may he ascend any pole, tower or other electric supply line support without being at the time in possession of a written instruction to do so.

(b) The duties of the patrol will consist primarily in reporting.

(i) Damaged or faulty insulators.

(ii) Burns on conductors, insulators, pins, iron work or pilot cable.

(iii) Broken or detached birdguards.

(iv) Broken strands on stranded electric supply conductors and ground wires.
(v) Uneven sagging of line.
(vi) Leaning poles.
(vii) Any disturbance at or adjacent to tower and pole foundations.
(viii) Dangerous branches of trees.
(ix) Loose stay wires.
(x) Loose cattle guards.
(xi) Dead birds near route.
(xii) Construction of new roads, buildings or other structures near the line.
(xiii) Erection of new telephone, telegraph or other electric supply lines by others near the Electricity Board electric supply lines.
(xiv) Broken wires (see also paragraph 9.3).

(c) In the standing orders, the method of reporting defects, method of detecting faulty insulators with the line conductors live, and other matters are clearly defined, and must be strictly followed by the patrol.

(d) Each patrol will be patrol will be provided with a pair of binoculars, for the safety and proper use of which he will be held responsible.

(e) The satisfactory operation of the telephone system installed along the main trunk and branch electric supply power lines is obviously essential to ensure safety in switching operations. It is, therefore, most important that patrols should give as much attention of to the inspection and reporting on the telephone lines as on the condition of the electric supply power lines.

CHAPTER-9
ACCIDDENT

9.1 "Accident Reports"---

(a) If any "accident" occurs in connection with the generation, transmission, supply or use of energy in or in connection with any part of an electric supply line or other electric apparatus, it shall be immediately brought to the notice of the authorized person in direct charge of the apparatus who shall give notice of the accident in writing to the Chief Engineer and the Superintending Engineer concerned, Himachal Pradesh Electricity Board with in 48 hours of the occurrence thereof; A copy of the notice shall also be sent to his immediate superior for information. In case where the accident results or is likely to have resulted in loss of life or personal injury the authorized person in direct charge of the apparatus shall also give notice of the accident in writing within 48 hours of the occurrence thereof to the Chief Electrical Inspector to Government, Himachal Pradesh, if the accident has occurred in the Himachal Pradesh territory, by Express Telegram, to be confirmed by post within 48 hours of the occurrence of the accident.

Reference: Section 33 Indian Electricity Act, 1910

N.B. The felling of a tree which results in damage to an electric supply line in an "accident" and must be reported as such.

(b) Neglect to report accidents is punishable by fine under section 47 of the Indian Electricity Act, 1910.

(c) In case of fatal accidents to persons immediate report shall also be made to the nearest police thana and the body should not be allowed to be removed until the police enquiry is completed.

9.2 "Resuscitation Drill Qualification"—

Every employee must qualify himself in the resuscitation drill described in Chapter 11, and see that the men working with him are also familiar with this method of resuscitation.

9.2 "Fallen Wires"---

(a) It shall be the duty of all employees to watch for fallen electric supply line conductors and other wires belonging to the Electricity Board. When an employee finds a fallen wire he shall stand by it to protect all street and highway traffic from it. He shall as soon as possible instruct some one from those available in the neighbourhood to telephone or otherwise inform the nearest headquarters either to have the wire made dead and earthed or to have it raised from the ground.

This employee shall not leave the fallen wire until he has been requested to do so by the authorized person in direct charge of the electric supply line.

(b) All fallen wires should be considered alive unless proved to be dead. When suspected to be alive they should, after taking proper precautions with a dry pole, be moved aside.

CHAPTER-10
WORK EXECTUD BY CONTRACTOR'S ENGINEERS

10.1 "Switching Operations for Contractor's Engineers"—

When it is necessary for a contractor's Engineer to work on apparatus, he shall request the Executive Engineer (or the Sub-Divisional Officer) to arrange to isolate and make the apparatus dead, if the necessary switching operations are under the instructions of the Power Controller; paragraphs 6.1.

(a) and the Sub-Divisional Officer, if the necessary switching operations are under the instructions of the Sub-Divisional Officer; paragraph 6.1 (b). The permit-to-work and released switchgear castel and other keys of the locked in earthing switches and locked-out isolating Switches and circuit breaker shall under these circumstances be issued by the Sub-Station Operator or the Sub-Divisional officer, as the case may be, direct to the Contractor's Engineer, who will follow the same procedure when executing the work and sign the clearance certificate, paragraphs 6.2 (e) 6.4 (b), upon its completion returning the switchgear keys, as laid in this Safety code for a duly authorized employee of the Electricity Board in charge of a working party.

CHAPTER-11
TREATMENT FOR ELECTRIC SHOCK

11.1 "Resuscitation Drill"—

Every employee shall qualify himself by practical study and drill in the treatment for electric shock according to the instructions contained in this Chapter. These instructions are issued by the Himachal Pradesh State Electricity Board under Rule 44 of the Indian Electricity Rules and accordingly copies, both in English and in the vernacular of the District, are fixed in a conspicuous place in every generating station and Sub-station in the Himachal Pradesh. The instructions are reproduced here (paragraphs 1.2 to 11.8 inclusive) in order that all employees shall become thoroughly familiar with them.

11.2 "Removal from Contact"—

(a) If the person is still in contact with the apparatus that has given him shock, break the electric circuit at once if there be an interrupter close at hand if not, loose no time, but proceed to remove the body from contact with the live conductor.

(b) Do not touch the man's body with bare hands, but , if India-rubber gloves are not at hand pull him off the live conductor by his coat tail, if his clothes are not wet, or fold your coat, or some dry articles, such as a newspaper, into two or three thicknesses and, using this as a pad, take hold of the body and pull it away from the circuit, or, a broom handle may be used to raise the body or to detach the wires from it. A good plan is to stand on dry board, or on a thick newspaper or bundle of sacking and charge the body with the shoulder.

11.3 "Preliminary steps"—

Extinguish any sparks if the patient's clothes are smouldering. Ascertain if he is breathing and send for a doctor. If apparently not breathing and no help is available, do not waste any time, but proceed to give artificial respiration as follows:

(j) Place the victim in the face down prone position. Bend his elbows and place the hands one upon the other. Turn his face to one side, placing the cheek upon his hands.

(ii) Kneel on either the right or left knee at the head of the victim facing him. Place the opposite foot near the elbow. If it is more comfortable, knee on the both knees, one on either side of the victim's head. Place your hands flat upon the victim's back in such a way that the heels of the hands lie just below a line running between the arm-pits. With the tips of the thumbs just touching spread the fingers downward and outward.

(iii) Rock forward until the arms are approximately vertical and allow the weight of the upper part of your body to exert slow, steady, even pressure down ward upon the hands. This forces air out of the lungs. Your elbows should be kept straight and the pressure exerted almost directly downward on the back (see Fig-v).

(iv) Release the pressure, avoiding a final thrust, and commence to rock slowly backward. Place your hands upon the victim's arm just above his elbows (see Fig-vi)

(v) Draw his arms upward and toward you. Apply just enough lift to feel resistance and tension at the victim's shoulders. Do not bend your elbows, and as you rock backward the victim's arms will be drawn toward you. Then drop the arms to the ground. This completes the full cycle. The arm lift expands the chest by pulling on the chest muscles, arching the back, and relieving the weight on the chest (see Fig-vi).

(vi) The cycle should be repeated 12 times per minute at a steady, uniform rate. The compression and expansion phases should occupy about equal time, the release periods being of minimum duration.

(vii) Relief Operators:- In changing operators, the relief operator kneels beside the operator and takes over so as not to interrupt the rhythm of pressure and release.

11.5 "General"---

Be careful to avoid violent operations as injury of the internal organs may result from excessive and sudden pressure.

11.6 "Upon Recovery"---

Burns, if serious, should be treated with a proper oil dressing. Avoid exposing patient to cold. Administer no restoratives until the doctor come. Cold water may be drunk and smelling salts applied in moderation.

11.7 "Immediate Action"---

(a) When a man has received a severe electric shock, or has been subjected to poisonous gases, or has been removed from the water in a drowning conditional his breathing is usually stopped. In accidents of this kind, speed may save the injured man's life, so do not waste a second. Send for a doctor at once, but do not neglect the patient in doing so.

(b) The first thing to do is to get the injured man where you can work on him. This may necessitate lowering him from a pole, or raising him from a manhole is full of poisonous gases, or the injured man be in contact with a dangerous circuit on the pole. You must, therefore, work very carefully.

(c) Before you go into a manhole to save a person overcome by gas, obtain a handline, pass one end of the line twice around your own body under the arms, and have it tied securely. Your fellow workers can then pull you out if you are overcome. Take the other end of the line down in the hole with you to secure it to the victim, just as it is secured to you. Leave the loop on the ground.

(d) In taking a man off a pole, carry a handline up the pole, pass it over the first cross arm above the man. Tie the end of the handline round the man's body just under the arms. If the man has a belt, you may pass the line through the two 'D' rings of his belt, and tie it securely. Drop the other end of the line to those on the ground and have them pull it out, clear the injured man's safety strap, and have those on the ground, lower him as you guide him down the pole. Have some one there to catch him.

(e) If you are alone with the injured man instead of just looping the handline over the cross-arm above him, pass it completely aroundn the arm so that there will be less strain on your end of the line as you lower him.

(f) In doing this work rubber gloves should be worn. Try not to touch the injured man while he is contact with the dangerous circuit. If you can throw the handline around him, do not waste any time trying to get the line twice round his body. One wrap will do. If you have to touch him, take hold of his dry clothing only. Look out for his shoes, the nails are conductors, and you may get a shock through them.

(g) Usually you can most quickly clear the victim from the dangerous circuit by lifting him slightly above it while those on the ground hold the line taut. The men on the ground should then slowly lower him with the line while you guide him past the circuit. In these cases be sure that the victim will not fall when the current is interrupted. This can be done.

(i) By having him attached to a handline as just explained, and by having the line held taut by those on the ground before the current is interrupted.

(ii) By securing his safety belt before the current is interrupted; as, for example, round the pole or over a cross-arm.

(h) If you have to cut a live circuit, be sure that the live end in falling, will not strike you or people on the ground, and always turn your face away, to protect your eyes from the flash.

(i) In case of drowning, proceed with the treatment just as you would for electric shock or gas asphyxiation (paragraph 11.4).

(j) If a patrol engine is allowed to run in a closed room where the exhaust fumes cannot escape into the open air, the air is poisoned and any one breathing it may be overcome. First aid treatment for asphyxiation of this kind is just like any other case of asphyxiation. Get the victim out into the fresh air and proceed with the treatment as for electric shock (paragraph 11.4) until the doctor takes charge.

11.8 "Recovery"—

(a) Continue artificial respiration without interruption (if necessary for four hours) until natural breathing is restored. Cases are on record of success after three and a half hours of effort. The ordinary tests for death are not conclusive in cases of electric shocks, and doctors must be so advised by you, if necessary.

(b) When the patient revives, he should be kept lying down, and not allowed to get up or be raised under any consideration unless on the advice of a doctor. If the doctor has not arrived by the time patient has revived, he should be given some stimulate, such as a teaspoonful of aromatic spirits of ammonia in a small glass of water, or a drink of hot ginger, tea or coffee. The patient should then have any other injuries attended to and be kept warm, being placed in the most comfortable position.

(c) Resuscitation should be carried on at the nearest possible place to where the patient received his injuries. He should not be removed from this place until he is breathing normally of his own volition, and then moved only a lying position. Should it be necessary, due to extreme weather conditions, etc., to move from patient before he is breathing normally, he should be kept in a prone position, and placed on a hard surface (door or shutter) or on the floor of a conveyance resuscitation being carried on during the time he is being moved.

(d) A brief return of spontaneous respiration is not a certain indication for terminating the treatment. Not infrequently, the patient, after temporary recovery of respiration stops breathing again. The patient must be watched and, if normal breathing stops, artificial respiration should be resumed at once.

11.9 "Send for a Doctor"—

(a) If other persons are present when an accident occurs, sent one of them for a doctor without a moment's delay. If alone with a patient, do not neglect the immediate and continued resuscitation of the patient for at least one hour before calling a doctor to assist in further resuscitation efforts.

(b) Artificial respiration should not be interrupted for removing the patient to the hospital. It should be continued for at least two hours, if the body is still flexible, and rigidity, the sign of death, has not set in.

11.10 “First Care of Burns”—

(a) When natural respiration has been restored, burns, if serious, should be immediately attended to while waiting for the doctor to arrive.

(b) A raw or blistered surface should be protected from the air. If clothing sticks, do not peal if off, cut around it. The adherent cloth, or a dressing of cotton or other soft material applied to the burnt surface should be saturated with picric acid (0.5 per cent). If this is not at hand, use a solution of baking soda (one teaspoonful to a pint of water), or the would may be coated with a paste of flour and water, or it may be protected with vaseline, carron oil, olive oil, castor oil, machine oil, if clean. Cover the dressing with cotton gauze, linen, clean waste, handkerchief, or other soft cloth, held tightly in place by a bandage. The same coverings should be tightly bandaged over a dry, charred burn, but without wetting the burnt region, or applying oil to it. Do not open blisters.

11.11 “First aid Boxes”—

As required under Rule 43 of Indian Electricity Rules, First Aid Boxes equipped with the necessary contents be kept at Power Houses and Sub-stations.

CHAPTER 12
INDIA ELECTICITY ACT AND RULES

12.1 "Knowledge of the Indian Electricity Act and Rules"—
Every employee of gazetted rank is expected to have a competent knowledge of this Act and these Rules, and lack of such knowledge shall not be accepted as an excuse for permitting any infringement of them in the operation, maintenance or construction or apparatus works in his charge.

No……
From B/S

HIMACHAL PRADESH STATE ELECTRICITY BOARD
Switching Instructions

("Apparatus includes all Electrical Apparatus and Electric Supply lines.")

From the POWER CONTROLLER, Himachal Pradesh State Electricity Board, Shimla

To the EXECUTIVE ENGINEER. _____Division_____

Immediate notification of receipt of this form must be sent to the Power Controller by telephone—

Making Dead—on receipt of instructions from the Power Controller, disconnect and earth the following apparatus in proper sequence according to his instructions. Where the circuit is energized at both ends, the Power Controller will ascertain that both ends are disconnected from the source of supply before instructing you to earth the apparatus:-

From_____A.M./P.M., on_____[date]

(a) Apparatus_____Circuit No. _____

To_____A.M./P.M., on_____[date]

From_____A.M./P.M., on _____[date]

(b) Apparatus_____Circuit No._____

Work to be carred out—The following work will be carried out under the charge or the authorized persons mentioned, each of whom will obtain his permit-to-work, (Form C/SC) from you before proceeding with his working party of men to the site of work, and each authorised person in charge of the work must notify the Power Controller by telephone immediately he has completed his portion of the work and is clear of the apparatus and has personally returned his permit-to-work duly completed and signed to the Sub-station Operator.

(a) Work_____ authorized persons in charge of the working party _____designation _____

(b) Work_____ authorized persons in charge of the working party _____designation _____

Important—(i) Completion times stated above are approximate and subject to alteration.

(ii) In case of electric supply lines and electrical apparatus of more then one circuit number or other designation must be very clearly entered in above.

Making Live— The above electric supply lines and electrical apparatus must not be made live again until receipt of instructions from the Power Controller.

From the SUB-STATION OPERATOR at Sub-Station.

To the POWER CONTROLLER, Himachal Pradesh State Electricity Board, Shimla.

Instructions from you to open circuit breakers received by _____ at _____A.M./P.M. on _____(date)

Instructions from you to earth the apparatus received by _____at _____A.M./P.M. on _____(date)

You were notified that the apparatus is made dead and earthed by_____ at _____A.M./P.M. on _____(date)

Permit-to-work No._____issued by _____to _____at _____A.M./P.M._____(date)

Permit-to-work No._____issued by _____to _____at _____A.M./P.M. on_____(date)

Permit-to-work, duly completed, signed and returned to me by_____at _____A.M./P.M. on_____(date)

Permit-to-work, duly completed, signed and returned to me by_____at _____A.M./P.M. on_____(date)

Instructions received from you by _____to make the line/apparatus live at ____A.M./P.M. on_____(date)

Instructions carried out by _____ at _____A.M./P.M. on_____(date)

You were notified that the circuit is made alive by _____at_____A.M./P./M. on _____(date)

All keys of the locked-in earthing switches and locked-out isolating switches and circuit breakers controlling the apparatus were in the possession of _____(Sub-station Operator) * (the authorized person in charge of work) _____throughout the period, the apparatus remained dead and earthed.

Signed_____

Sub-station Operator,

Date_____ _____Sub-Station.

Strike out the one which does not apply.

No……..
Form C/SC (a)

HIMACHAL PRADESH STATE ELECRTICITY BOARD

Permit-to-work

It is safe to work on the following apparatus which is dead, isolated from all live conductors, and is earthed. All other parts are dangerous.

Here state exactly the apparatus on which
It is safe to work

Here state exactly at what point or points
The apparatus is connected to earth.

Sub-Divisional Officer
Signed by…….. ……..(strike out the designation which does not apply)
Sub-Station Operator

Time _____A.M./P.M. Date _____

FORM OF RECEIPT

Note:- This form, after being signed for the work to proceed must be retained by the authorized person incharge of the work until thework is suspended or completed.

Signed by …….designation…….……being the authorised person incharge of the work., for which the apparatus mentioned hereon has been made dead and to whom all the keys of the locked in earthing switches and locked out isolating switches and circuit breakers controlling the circuit have been duly handed over.

Time…….A.M./P.M. Date……..

CLEARANCE CERTIFICATE

Note:-The apparatus mentioned here must not be again made live until this Form has been signed and returned by the authorised person incharge of the work. In cases where more then one gang of men are working on the same apparatus, it must not be again made live until similar From have been signed and returned by all the authorised persons incharge of the work.

I here by declare that all men under my charge have been withdrawn and warned that it is no longer safe to work on the apparatus specified on this Form and that gear, tools, temporary earth and other connections are all clear, leaving that portion of the apparatus upon which my men have been working ready for putting in to commission.

Signed by…….designation…….……an authorised person incharge of the work. All switchgear keys returned.

Time……A.M./P.M. Date……

CANCELLATION

I hereby declare this Form cancelled. All switchgear keys received back.

Sub-Divisional Officer

Signed by ……..(strike out the designation which does not apply)

Sub-Station Operator

Time…….A.M./P.M. Date…….

Note:- The Form, duly completed, must be forwarded for record at once to the Power Controller or be kept for record by the Sub-Divisional Officer, according to whose instructions the apparatus was made and earthed.

Strike out in cases where the controlling switchgear is not equipped with locks and keys.

No……..
Form C/SC (b)

HIMACHAL PRADESH STATE ELECTRICITY BOARD
Permit-to-work

It is safe to work on Circuit No. 1 of the following electric supply line which is dead, isolated from all live conductors, and is earthed. All other parts are dangerous.

Here state exactly the apparatus on which It is safe to work. ……. …… ……..... …….

Here state exactly at what point or points The apparatus is connected to earth. ……. ……. ……..... ……....

Sub-Divisional Officer
Signed by……(strike out the designation which does not apply)
Sub-Station Operator

Time_____A.M./P.M. Date_____

FORM OF RECEIPT

Note:-This form, after being signed for the work to proceed must be retained by the authouised person incharge of the work until the work is suspended or completed.

Signed by ……designation ……being the authorised person incharge of the work, for which the apparatus mentioned hereon has been made dead and to whom all the keys of the locked, in earthing switches and locked out isolating switches and circuit breakers controlling the circuit have been duly handed over.

Time…….A.M./P.M. Date……..

CLEARANCE CERTIFICATE

Note:-The apparatus mentioned here must not be again made live until this Form has been signed and returned by the authorised person incharge of the work. In cases where more then one gang of men are working on the same apparatus, it must not be again made live until similar Form have been signed and returned by all the authorised persons incharge of the work.

I hereby declare that all men under my charge have been withdrawn and warned that it is no longer safe to work on the apparatus specified on this Form and that gear, tools, temporary earth and other connections are all clear, leaving that portion of the apparatus upon which my men have been working ready for putting into commission.

Signed by……designation……an authorised person incharge of the work.
All switchgear keys returned.

Time…….. A.M./P.M. Date……..

CANCELLATION

I hereby declare this Form cancelled. All switchgear keys received back.

Sub-Divisional Officer

Signed by…….(strike out the designation which does not apply)

Sub-Station Operator

Time……A.M./P.M. Date…….

Note:- The Form, duly completed, must be forwarded for record at once to the Power Controller or be kept for record by the Sub-Divisional Officer, according to whose instructions the apparatus was made and earthed.

Strike out in cases where the controlling switchgear is not equipped with locks and keys.

NO……..
Form C/SC (c)

HIMACHAL PRADESH STATE ELECTRICITY BOARD
Permit-to-work

It is safe to work on Circuit No. 1 of the following electric supply line which is dead, isolated from all live conductors, and is earthed. All other parts are dangerous.

Here state exactly the apparatus on which it is safe to work.

……..
……..
……..

Here state exactly at what point or points the apparatus in connected to earth.

……..
……..
……..

Sub-Divisional Officer
Signed by …….(strike out the designation which does not apply)
Sub-Station Operator

Time_____A.M./P.M. Date_____

FORM OF RECEIPT

Note:-This form, after being signed for the work to proceed must be retained by the authouised person incharge of the work until the work is suspended or completed.

Signed by ……designation ……being the authorised person incharge of the work, for which the apparatus mentioned hereon has been made dead and to whom all the keys of the locked, in earthing switches and locked out isolating switches and circuit breakers controlling the circuit have been duly handed over.

Time…….A.M./P.M.

Date……..

CLEARANCE CERTIFICATE

Note:-The apparatus mentioned here must not be again made live until this Form has been signed and returned by the authorised person incharge of the work. In cases where more then one gang of men are working on the same apparatus, it must not be again made live until similar Form have been signed and returned by all the authorised persons incharge of the work.

I hereby declare that all men under my charge have been withdrawn and warned that it is no longer safe to work on the apparatus specified on this Form and that gear, tools, temporary earth and other connections are all clear, leaving that portion of the apparatus upon which my men have been working ready for putting into commission.

Signed by……designation……an authorised person incharge of the work. All switchgear keys returned.

Time…….. A.M./P.M.

Date……..

CANCELLATION

I hereby declare this Form cancelled. All switchgear keys received back.

Sub-Divisional Officer

Signed by…….(strike out the designation which does not apply)

Sub-Station Operator

Time……A.M./P.M.

Date…….

Note:- The Form, duly completed, must be forwarded for record at once to the Power Controller or be kept for record by the Sub-Divisional Officer, according to whose instructions the apparatus was made and earthed.

Strike out in cases where the controlling switchgear is not equipped with locks and keys.

HIMACHAL PRADESH STATE ELECTRICITY BOARD

DANGER

THIS APPARATUS IS LIVE-KEEP CLEAR

DO NOT TOUCH

DANGEROUS TO LIFE

The Danger Notice was placed by…… designation ……at ……..A.M./P.M……..(date) and must not to removed except by him.

Removed by ……designation…….at A.M./P.M. ……..(date)

Form E/SC

HIMACHAL PRADESH STATE ELECBOATRICITY RD

CAUTION

MEN WORKING ON THIS APPARATUS
TO MAKE IT LIVE WILL KILL THEM

Electric supply line……
Electrical Apparatus……..
Working party in charge of …….designation……..
This Caution Notice placed on Controlling switchgear in the presence of…….Incharge of the working party at……..
A.M./P.M……(date)
Signed by……..[authorised person in charge of the working party]

Sub-Divisional Officer

Designation_____Signed by_____

Sub-Station Operator

Permit-to-work returned at_____A.M./P.M._____(date)
This caution Notice removed from the controlling switchgear in the presence of _____in charge of the working party at_____
A.M./P.M._____(date)

Sub-Divisional Officer

Signed by_____ (Signed by)……. ……..

_____

Sub-Station Operator

Designation_____

- Strike out the designation which does not apply.
- Signature of the authorised peroson incharge of the working party.

HIMACHAL PRADESH STATE ELECTRICITY BOARD

SUB-STATION ORODER BOOK

(See Para 2.19 of the Safety Code)

Date	Time	Message or order	Received from	Sent to	Signature of Operator